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ABSTRACT

To meet the needs of society today, universities must balance their traditional specialty education with interdisciplinary approaches based on a problem-solving orientation. Utilizing this viewpoint, some of the issues and/or problems facing universities in promoting interdisciplinary education are analyzed in this speech. Issues which may retard the creation and viability of interdisciplinary programs include (1) more faculty involvement, time, and money per credit hour than the traditional specialty education, (2) the present exploratory nature of establishing programs rather than replication of recognized models and processes, (3) the inflexibility of university organizational patterns and processes, (4) the inflexibility of the university faculty member as a result of a high degree of specialization, and (5) concern that broad, multidisciplinary approaches cannot meet the high standards maintained for graduate studies. Other issues which strongly support the development of viable programs include (1) integration of disciplines as necessary for problem-solving, because of the complex nature of social problems in our world societies, (2) relevance inherent in the integration of disciplines for problem-solving purposes, and (3) the search by governmental, professional, and industrial organizations for people who can integrate social and behavioral disciplines with the sciences and technology. (BL)

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ISSUES IN ENVIRONMENTAL EDUCATION

Chris Barthel - John Thompson

Recent concern about the environment has resulted in the critical examination and evaluation of the education process. Many reports have recognized the splendid contributions of higher education in the training of specialists, but have also recognized that a single specialty, or even a group of specialties operating independently, cannot provide solutions to the complex problems of today's societies. Many diverse specialties, or disciplines, are involved in the problem areas and each has a contribution to make in the consideration and solution of a complex problem.. Considerable discussion of multidisciplinary or interdisciplinary education has been underway for several years. Such discussion inevitably includes the concepts of problem solving, of "real-world" problems, of the use of a variety of non-academic people in the education process, the integration of disciplines, of community service, among others. During the past year two prestigious organizations have, in their documents, stressed the crucial need for interdisciplinary education-- and innovative processes to meet the need. In a brochure entitled Academic Change and Improvement the American Association of State Colleges and Universities said,

> The over-professionalization of learning that has resulted in our emphasis of narrow specialties taught by highly credentialed faculty needs to be balanced by interdisciplinary approaches, by a problem-solving orientation, or by the use of "teachers" from business,

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> government, labor, the arts--men and women who have expertise in a field but who do not possess degrees customarily required for college teaching.

The brochure continues:

> Learning--special and general--would emphasize the development of problem-solving skills rather than a narrow expertise: the focus would be interdisciplinary rather than disciplinary. If we are to train students for the future we must provide them with the capacity for continuous learning so that as job requirements change individuals are able to adapt. The knowledge explosion and the rate at which current information becomes obsolete have rendered impractical an education that teaches specific facts as ends in themselves. Rather, students should have an awareness of the information that exists at a given time, the knowledge of how to retrieve it and to evaluate it, and the ability to use it in the decision-making process. In brief, students need a kind of education that permits them to deal with rapid change rather than one that provides a set body of knowledge.

In the governmental arena the Congress created and assigned a new Fund for the Improvement of Postsecondary Education to the Secretary of Health, Education, and Welfare to be used for developing entirely new approaches to education. In printed

guidelines for nationwide competition for these funds, interdisciplinary education received prominent attention. The Fund states that there is a need for "imaginative proposals designed to prepare individuals and groups for effective participation and problem solving in modern society." The Fund guidelines further state that "new families of skills are needed to keep pace with emerging occupations and professions... skills needed in the future will increasingly include the ability to work effectively with others." It is also pointed out that what is needed is "integration across courses and disciplines; integration of learning resources; and integration of formal learning with other life experiences." Clearly these guidelines are a call for a change from the traditional education process.

Yet, today, the universities continue their emphasis on specialty education. The great majority have little concern nor have they given priority for education involving the entegration of the disciplines in the problem-solving process. True, a number of institutions train students for problem solving and recognize the need for multidisciplinary approaches on individual research or service projects. But there is a severe dearth of classroom activities of the type stressed by the American Association of State Colleges and Universities and the Fund for the Improvement of Postsecondary Education. A few, very few, truly interdisciplinary education programs have emerged. Most of those that have, have done so in the face of great obstacles on their campuses. Most are inadequately supported by faculty, staff, and administration. Most are severely underfunded. Many well-intentioned programs have failed because of these reasons.

Thus, at present there is a widely promulgated expression of need for interdisciplinary education and, at the same time, little university response toward meeting the need. A number of issues have caused this unfortunate paradox. Some of these issues retard the creation and viability of interdisciplinary programs while others vigorously support such activities.

The first, and a fundament, issue retarding interdisciplinary education is that such education requires much more faculty involvement--and time--and money--per credit hour than does the traditional specialty education. More faculty members per student are required to present materials, counsel and guide students, and to assist in arranging real-world assignments for the students. Additionally a lower student-faculty ratio is needed to properly evaluate student performance, and to permit the faculty members to perform research and take part in service activities. An essential element of interdisciplinary education is interaction of faculty members working as a team. All of these responsibilities are time-consuming. And faculty time costs money. By the very nature of the process, interdisciplinary education is more costly than is specialty education. I would suggest that costliness is not an attraction at a time of austerity and during a period of cost-effective consciousness.

Another important issue is the exploratory nature of the work underway in interdisciplinary education. Different institutions are experimenting with different models and processes. As yet no model or process has been widely replicated. Experimentation itself is costly and often produces negative results. Research and experimentation no longer have the glamour and prestige of a

decade ago. Universities and funding agencies undoubtedly, and correctly, look upon interdisciplinary education as a high-risk acitivity.

A third issue is the inflexibility of the university organizational patterns and the university processes. The existing organizational patterns and processes have served higher education and society extremely well. They are an accepted part of the American tradition and culture. The system in its present form cannot accommodate interdisciplinary education. Interdisciplinary study by its very nature cuts across departments, schools, and colleges. Administratively where is the academic home of the group involved? To whom is the group accountable for its successes and failure? In addition, what and where is the reward system for the instructor involved in an interdisciplinary program? If the instructor is housed in a department, and he frequently is, how does he get rewarded for his interdisciplinary activities? Who recommends promotion and salary increases for non-departmental work? The lack of a proper administrative structure and the lack of a reward system for instructors have led to the demise of many university programs.

A fourth issue is the inflexibility of the university faculty member as a result of a high degree of specialization. He is "at home" in his field but may be unaware, sometimes almost illiterate, in other fields, even related fields. This gives rise to a natural concern, awe, perhaps even fear, at the prospect of performing outside of his area of specialization. This feeling is augmented by the declining prestige of universities and their

faculties in recent years. Respect, recognition, and security have given way to concern and suspicion. As a result he is reluctant to become involved in something new or different.

Another issue is a general academic concern that broad, multi-disciplinary approaches cannot meet the high standards maintained in the universities for graduate studies. Many faculty members and administrators believe that the training of multidisciplined personnel is a "watered-down" educational experience. The traditional graduate program becomes more specialized as the student becomes more involved in it. In an interdisciplinary program breadth is needed as well as some depth. Should a student seeking and needing breadth receive graduate credit for courses in disciplines where he has little or no expertise? The seeking of breadth in the program leads our colleagues to question if the work is of graduate calibre.

In contrast to the above issues which retard or prevent the development of interdisciplinary education programs, or sometimes result in their demise, there are other issues which strongly support the development of viable interdisciplinary programs in the universities.

A principal and, in my opinion, the overriding issue is that our societies the world over are sadly lagging in defining, analyzing, and solving complex social problems. Our life-sustaining environment is rapidly deteriorating. Urban decay has been accepted as a way of life, it is a new culture. Drug addiction and crime run rampant in our communities. The problems of children and youth and of the aging are mounting at an alarming rate. Corruption is becoming commonplace in formerly respected offices. We could go on and on.

If civilization is to survive at a respected level, we must get at the problems. ~~It is believed that~~ An integration of disciplines is necessary for problem solving. If this is so, and we cannot risk a belief that it is not so, then we must develop the processes and the people for the integration of disciplines in problem solving. This demands a major priority for interdisciplinary education, a priority that should be recognized at all levels and in all sectors of our societies.

A related issue is the relevance of the integration of disciplines in problem solving. A major cause of the deterioration of the acceptance of higher education by policy makers and the general public is a widely growing opinion that education is not equipping its students for facing the stark realities of today. Young people in particular are grasping for things relevant--and their enthusiasm for environmental and urban interdisciplinary education is a measure of their recognition of need and of their dedication to the task of improving the quality of life. We must not dampen this enthusiasm, instead we must channel it into a meaningful educational experience.

Another issue is the search by governmental, professional, and industrial organizations for people who can integrate social and behavioral disciplines with the sciences and technology. This search was caused not by the philanthropy and good will of the organizations but because of new requirements placed upon them by changing values of our societies, some backed by stringent legislation. New consumer-oriented activities and the legal requirement for environmental impact statements have forged a requirement for persons who understand and can practice the integration of disciplines. The need is a real and a

great one. It can be backed by the experiences of some of the viable university environmental programs.

Another issue is that most university programs continue to stress attention to a "set body of knowledge" and only peripherally, such as in research and service activities, provide education and training in the problem-solving process. A sub-paradox is that the solution of complex social problems is vastly different from the solution of traditional problems of the classroom. There is no single, "back-of-the-book" answer to today's social problems. But there is methodology which can be applied, methodology which lends itself to classroom attention.

Let us now turn, generally, to the present status of all of the above issues, both pro and con, to interdisciplinary education. Quite bluntly, except in a few rare instances, such as the establishment of the University of Wisconsin-Green Bay, there is no large-scale, even moderate-scale, support of interdisciplinary environmental education. Agencies of the Federal Government and the Congress constantly speak of "innovative programs" and of "reform," but support of higher education is dwindling. As an example, the need for environmental literacy, so eloquently propounded by President Nixon in the introduction to the First Annual Report of the President's Council on Environmental Quality, resulted in the creation of a program in environmental education in the U. S. Office of Education in 1970. Three years later there is a great question in Washington as to the need for support of this program. The State Assemblies and Legislatures are striving for cost effectiveness, more credit hours per faculty

member. The universities are struggling to maintain a balanced budget during a period of runaway inflation; their activities and services are being cut, not expended.

There is this lack of support in spite of the fact that there are many and wide-scale indications that our civilization, our way of life, is in jeopardy--environmental degradation, energy shortages and depletion, urban decay, rapid inflation, and others mentioned above. Tomorrow may well be too late for action which is needed today for healing our social ills. The universities have a major role to play in training the people to meet the present and future problems. If not the universities, who? The universities must gird themselves to play this role, and our societies must see that the role is adequately played.

The American Association of State Colleges and Universities wisely stated that the traditional specialty education of the colleges and universities must "be balanced by interdisciplinary approaches, by a problem-solving orientation, or by the use of 'teachers' from business, government, labor, the arts. . . ." The universities must accept this viewpoint if they are going to remain a viable part of our society. Present educational programs are not sufficient to meet the needs of mankind. We must change.

I submit that university attention to interdisciplinary education is not an activity to tear down traditional concepts which have provided so many benefits to mankind, but it is an exciting new approach to education. However, the new approach will require major, perhaps massive, support--perhaps support of the same magnitude as that provided in support of science by the creation of the National Science Foundation if the job is to be

done. Is the need for the solution of societal problems in 1973 any less important than the need for support of science in the early post-Sputnik era?